ALCOHOL DETECTION USING TOUCH BASED SENSORS

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ABSTRACT:

Every year alcohol-related accidents around the world occur on a large scale. For example in the U.S., driving under the influence of alcohol costs about 10,000 lives and costs about $ 194 billion. All countries are facing this problem worldwide. Modern car manufacturers offer no solution to this huge problem. Still they only give it to luxury cars. Many accidents around the world are caused by 'DRUNK DRIVING'. If manufacturers are able to provide a sensor that can detect whether the driver is drunk or not then the number of accidents can be reduced. So that we can come up with a new idea a sensory-based sensor that detects whether a person is intoxicated or not. If the person is intoxicated and the unlit vehicle is in operation and a warning message is sent registered numbers. This paper presents an overview of the concept and use of a touch-based optical sensor (TruTouch sensor) to monitor the concentration of alcohol in a motor vehicle.

Keywords: alcohol detection message- trutouch system-bac level-hmi- alert message

1. INTRODUCTION:

Road safety has become a major public health problem.

. Now a days, many road accidents happen because of the driver's drinking and driving the car. The proposed program Drunk and Drive Discovery is used to detect drivers who are drunk. The Trutouch system is widely used to find drunk drivers again they control their vehicles to reduce accidents. This program is installed in the car. If someone is drunk drives the car, the alcohol sensor inside the car detects alcohol by the touch based sensors. UV the sensor is on the front and back of the car. If driver is drunk the sensor detects and stops the car, then send a message to relatives. The percentage of alcohol in the circulatory system at any given time can be directly related to the driver's sensory, cognitive, and physiological function. Legal restrictions on alcohol abuse have been imposed on private and commercial motorists. These systems work well for law enforcement purposes but are not suitable for normal use by consumers.
The purpose of the sensor development is now to develop a seamless integrated system in the automotive infrastructure, to provide consumers with information on their alcohol congestion without compromising their daily driving experience. To achieve this, the design of the human device (HMI) has been proposed that incorporates an optical

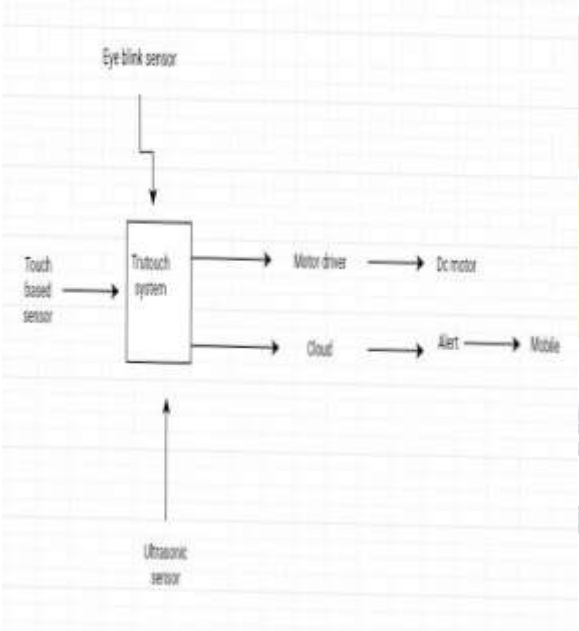
sensor into the car's start button. The use of motor vehicle sensors combined with high-quality signal processing supports a simple and effective method of combating extinction, improving the safety and performance of the system.

2. PROPOSED SYSTEM:

In the proposed program, we will identify weather the person driving the car drank or not. In addition it provides other applications such as automated car lock system. Using a TruTouch based sensor to identify the level of alcohol in a person.

A. If he drinks alcohol and when he touches the steering, immediately he will sensors will detect whether he is drunk or not and if he is drunk the car wont start.

3. ARCHITECTURE:



4. SENSOR THEORY OF OPERATION:

TruTouch alcohol measurement technology has been validated using a variety of methods including in vitro (test tube) studies of multi-sample samples, clinical studies involving human alcohol consumption, and real-world measurements by clients in a variety of challenging environments. Verification efforts are illustrated by numerous peer- reviewed articles and a solid intellectual property base.

Scientific Basis of the TruTouch Measurement:

TruTouch technology uses near-infrared spectroscopy (NIR) to measure skin tissue. The NIR optical circuit typically extends part of the electromagnetic signal between the spectrum, assuming only 0.7 μm, and infrared, starting at 2.5 μm.

However, to measure alcohol in vivo (in person), some components of the NIR are more useful than others. Common features observed in the NIR are overtones and a combination of basic vibrations of hydrogen mixed with carbon, nitrogen, and oxygen. The high concentration of alcohol absorption indicates features above the NIR region (see Figure 1). The 1.25- mm 2.5 μm circuit consists of a size of 1 with a combination of carbon-hydrogen bonds and an oxygen-hydrogen bond. The 0.7-1.25 μm region contains more than the highest orders for these bonds. Examination of Figure 1 and its entry shows that a region of 0.7-1.25 μm is 400 times weaker than a long-distance signal, a region of 1.25- 2.5 μm. In addition, the use of the visual region (0.3 to 0.7 μm) and the 0.7-1.25 μm portion of the NIR is limited to the presence of pigmented skin (melanin) which causes significant differences between individuals, especially of different races. In contrast, the long- term region is not affected by color [10]. As a result of the large signal and the lack of color, TruTouch technology is designed to measure the maximum length (1.25-2.5 μm). In addition to the benefits listed

above, the visual NIR region (4000-8000 cm-1 or 1.25-2.5 μm) is of great interest in non-imported alcohol concentrations because it provides details of many analytics, including alcohol and other organic molecules present in tissues, while they support the visible length of a few millimeters with an acceptable suction factor. Comparing NIR detection (standardized to unit filtering) of alcohol and water collected using the TruTouch system, shows the effect of molecular structure on the NIR spectra absorption and shows the isolated areas of isolation (see Figure 2a).

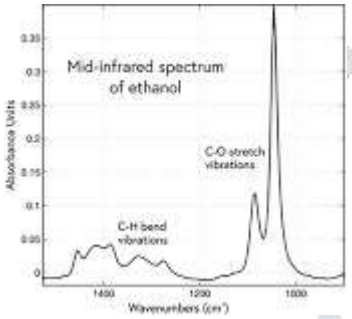
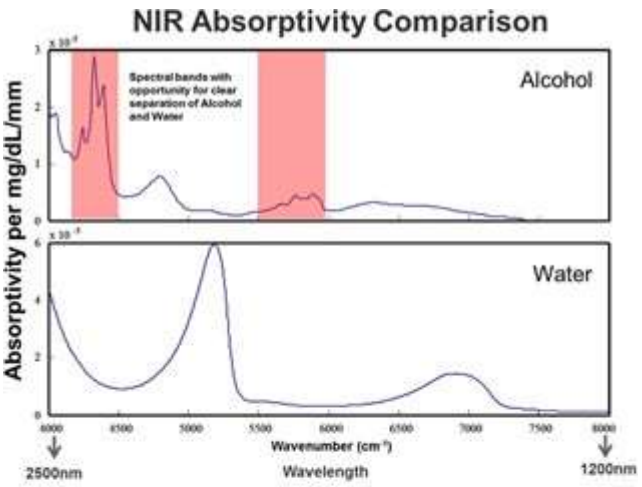
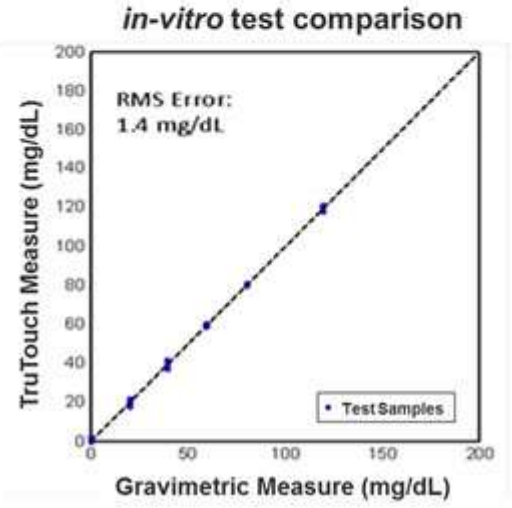


Figure 1. Absorptivity of alcohol in the NIR and visible



(a)



(b)

Figure 2. Comparison of Alcohol, Water in NIR (a);* Ethanol Test Results: 98 *in-vitro* samples *(b).

TruTouch systems (including Mark 1) are based on Michelson interferometer tools Fourier Transform IR (FTIR) that transmit NIR rays to the skin and subcutaneous tissue and collect a well-displayed signal using a fiber-based optical probe. The collected light contains spectral details that allow the determination of the alcohol concentration of the subject directly from the scale. Specific details of the industrial version of the virtual liquor system can be

found in many United States patents and applications [16,17,18,19,20].

5. SOLID STATE TOUCH SENSOR (MARK 2)

The Mark 2 sensor developed for potential use in automotive applications uses standard automotive design (see Figure 4a) and isolation semiconductor lasers to incorporate the specific spectral information required for alcohol measurement.

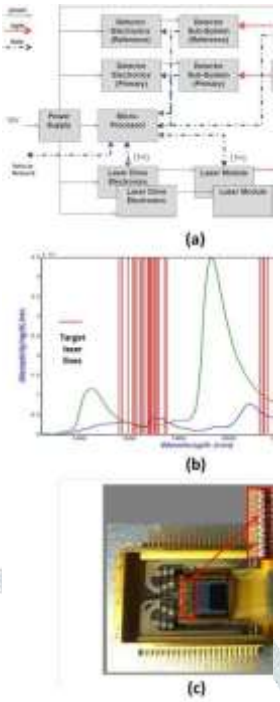


Figure 4. Solid State Design (a), Laser line targets (b), Prototype Multi laser Module (c).

Contrary to Mark 1's sensor, which measures the slow-moving spectrum, the new design uses delicate spectral lines, specially selected by analyzing hundreds of thousands of in-vivo alcohol tests.

Laser wavelengths are targeted at visual circuits where ethanol and water absorption levels are divided (see Figure 4b), enabling ethanol availability to

increase exponentially while avoiding potent water absorption factors.

The use of multiple different lasers to investigate spectral data allows for a more integrated, integrated module. By the design of Mark 2, the 12 laser prototype module was developed separately

laser die controllable mounted on ceramic substrates (see Figure 4c). The inserted detailed view shows the file for

Each laser die mounted on a clay substrate. The design is integrated, regardless of the model phase, and can be further developed using packaging techniques designed for laser systems in other industries.

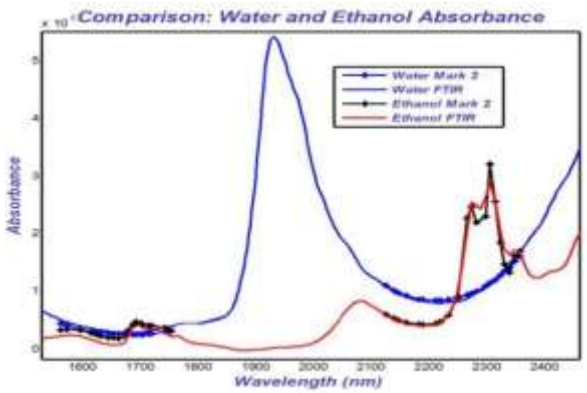


Figure 5. Mark 2 Measurement performance comparison comparedto FTIR.

To demonstrate the accuracy of the spectral measurement of the Mark 2 system, standard measurement measurements have been made and compared with the Mark 1 system and laboratory distance spectrometers (see Figure 5). Estimates to date show good compliance with laboratory standards and Mark 1 system estimates Additional tests are ongoing and planned to include in vitro and in-vivo studies similar to those described earlier to ensure better performance of all previous FTIR systems and methods.

terms of operation of the vehicle-based system.

6. AUTOMOTIVE ADS SYSTEM CONSIDERATIONS

Although great strides have been made in establishing the feasibility of a non-touch alcohol system, further research and development is needed to achieve a automotive production system that can meet aggressive performance objectives, duration, reliability and robustness. Several important considerations in touch- based construction are examined below.

HUMAN MACHINE INTERFACE

Touch sensor gives us a natural opportunity to integrate the touch sensor pad into a standard switch to start the ignition.

The insertion of the proximity and / or touch sensor on the construction supports the ability to enable alcohol levels only where appropriate. Haptic actuator (s) installation

and / or light illuminates the natural response of HMI (see Figure 6). For example, light and haptic actuators can be used to provide the driver's response with proper finger placement, measurement initiation, measurement effect and other HMI feedback you want.

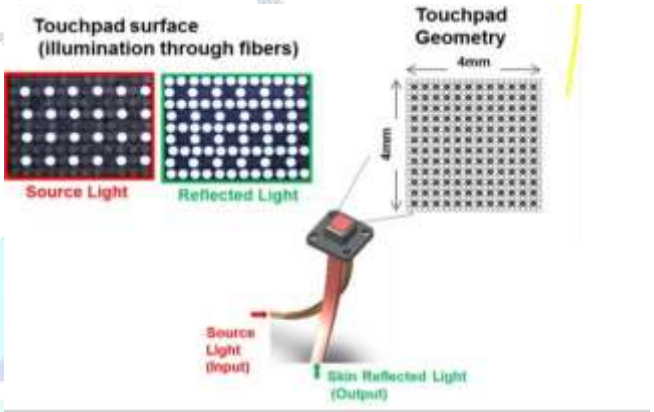


Figure 6. Prototype alcohol measurement ignition switch integration concept.

The car heating system provides a single place to measure environmental contact; other active areas throughout the vehicle exist where the driver / operator's skin touch interface can be used for initial

alcohol or occasional doses.

MONITORING THE SPEED OF THE VEHICLE

1. Whenever someone starts a car this the system starts working.
2. Check the trutouch level sensor for alcohol. If
BAC (Blood Alcohol Level) is higher than 0.02% and test read the ultra sonic sensor.
3. If the ultrasonic sensor reading is greater than
1m stop one car and slow down vehicle and re-inspect the ultrasonic sensory reading.
4. If there is no alcohol in the body, check it
driving drowsy using an eye blink sensor.
5. When the eye is closed for 5 seconds then check any
accidentally using a vibrating sensor. If any
accidentally send a warning message.
6. If there is no danger it means repeat step 3.

7. COMMERCIAL CHALLENGES:

A key feature of the technical limitations in the design of the Mark 2 system is the rigidity and immaturity of the base of the laser module and the support of the visible connectors. While advances in the field of lasers are widespread mainly due to new applications and emerging markets, there are currently limited fully developed semi-conductor lasers with targeted wavelengths and optical power directed at the Mark 2 system.

To date, high-frequency laser wavelengths are only required for small volume-specific applications or clinical research. In contrast, most of the low-wavelength lasers required for Mark 2 design are used with high volume, high reliability, and medium and low cost communication networks with high bandwidth. The lessons we have learned from the technology of evolution and the growing production of laser diodes can help speed up the maturation and availability of high-frequency wavelengths for use in this application. Research and advances in medical perceptions that do not bring progress, drive new programs and markets; increasing the production base and the investment testing required to lead to low cost competition, high reliability of high-quality alcohol-free motor vehicle modules.

8. CONCLUSION

Establishing sensory sensory technology that can be used to accurately and precisely measure blood alcohol concentration is an important first step in providing technological reduction solutions alcohol abuse. the system is now used in cars or on any four wheels.
Next time it can be launched on two wheels again. It
it can also be used in any organization to get drunk

people. In addition to this GPS module can also be used finding a car seat if alcohol is found in the body.

9. REFERENCES

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